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## (54) MUSIC PROGRAM DISTRIBUTING METHOD AND RECEIVING/ REPRODUCING DEVICE FOR DIGITAL MULTICHANNEL BROADCAST SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To enable reservation recording of a desired music for the unit of one piece of music by distribution a data stream containing a program list and a broadcast alarm signal wile multiplexing it on program data, and sending the ID of a certain music and a start signal as an alarm signal before broadcasting that music.

SOLUTION: A data stream 100 is composed of a program list 101 and an alarm signal 102, which is inserted into this data stream 100 at any suitable time point, and

distributed being multiplexed on program data 200. The program list 101 is the list of the music scheduled to be broadcaster in music programs during a prescribed period including other channels as well. The broadcast alarm signal 102 is sent out before the broadcast of the music part 202 in the program data 200 synchronously with its broadcasting timing. This broadcast alarm signal 102 contains an ID 103 of the music to be broadcaster later, broadcasting time 104 of this music, and start signal 105 to be sent out just before broadcasting the music.

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CLAIMS

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[Claim(s)]
[Claim 1] The distribution approach of the music program in the multichannel digital broadcasting system characterized by having following requirements (1) – (3).
(1) Carry out multiplex [ of the sound signal broadcast by the same channel in a data stream including a program list and a broadcast information signal ] to the program data which carried out compression coding, and distribute it.
(2) As for said program list, the musical piece ID of the broadcast schedule musical piece in the music program from which broadcast is planned by said channel during the predetermined period, a title, a broadcast predetermined time, etc. are described.
(3) While sending out ID of the musical piece as said broadcast information signal before carrying out broadcast initiation of a certain musical piece during broadcast of

said music program in said channel, before broadcast initiation of the musical piece, continue at said musical piece ID and send out a start signal as said information signal.
[Claim 2] It is the music program distribution approach characterized by describing the musical piece ID of a broadcast schedule musical piece, the title, the broadcast predetermined time, the broadcast channel, etc. also about the music program from which broadcast is planned by the channel with said program list other than said channel in claim 1.
[Claim 3] A means to be a receiving regenerative apparatus for carrying out reception playback of the program data distributed by the approach according to claim 1 or 2, and to extract said program list out of an input signal, and to display on a display as a chart of a predetermined format, If ID of said reserved musical piece is detected a means to choose from said chart the musical piece which a user wishes, and to reserve it, and out of said input signal The receiving regenerative apparatus characterized by having a means to extract the data of said reserved musical piece from said program data according to said start signal, and to record on the storage section, and the means which reads said recorded musical piece data from said storage section.
[Claim 4] The receiving regenerative apparatus characterized by having a means by which the musical piece concerned records said musical piece data of said reservation musical piece on said storage section in claim 3 according to the time amount broadcast most early when multiple-times broadcast of said reserved musical piece is carried out at said predetermined period.
[Claim 5] The receiving regenerative apparatus characterized by having a means to display the classification information included in said musical piece list all over said chart in claims 3 or 4, and a means for a user searching the musical piece to which said classification information is distributed as a key, and choosing free.
[Claim 6] The receiving regenerative apparatus characterized by having a means to report that to a user in either of claims 3-5 after record of said musical piece data of said reserved musical piece is completed in said storage section.
[Claim 7] The receiving regenerative apparatus characterized by having the means which said musical piece data can be interlocked with the accounting system of a multichannel digital broadcasting system, and can be read from record or said storage section to said storage section in either of claims 3-6.
[Claim 8] the receiving regenerative apparatus characterize by to have a means extract said reserved incidental information , such as a title of a musical piece , and a singer name , from said program list , a means record this incidental information on said storage section with said musical piece data of the musical piece concerned , and the means that read said recorded incidental information from said storage section , and carry out character representation of that content in either of claims 3-7 .

## DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] More specifically, this invention relates to the receiving regenerative apparatus for carrying out reception playback of the distribution approach and music program of the music program in a multichannel digital broadcasting system about a multichannel digital broadcasting system.
[0002]
[Description of the Prior Art] By multiplexing and transmitting the program data which carried out compression coding of a video signal and sound signals, such as TV program, broadcast for 4-8 channels is possible for multichannel digital broadcasting to one carrier frequency band. CS multichannel digital broadcasting system which made current and a communication satellite (following, CS) the relay center is employed. In this system, image broadcast of 50 or more channels and voice broadcast of 100 or more channels can distribute program data by one CS with the data compression technique by MPEG 2 specification.
[0003] In order to check the broadcast schedule of the program of these large number, in CS multichannel digital broadcasting system, an electronic program guide (following, EPG) display function occurs. With program data, this carries out multiplex [ of the program advice information which described broadcasting hours the content, etc. of the program broadcast by each channel ], sends it out, and extracts this program advice information from the data multiplex which the receiving regenerative apparatus only for multichannel digital broadcastings received. And the race card of a format predetermined because a user operates a receiving regenerative apparatus is outputted to a display. Furthermore, the channel of a program advice speciality is also prepared, and if this channel is tuned in, the program list broadcast by all channels will be displayed during a predetermined period. Moreover, the link information to each channel is described by EPG of this channel, and if a user inputs the channel number of a program while displaying EPG, or he doubles with the program column the cursor displayed by the screen and chooses the program of hope, it will change to the selected channel.
[0004] Moreover, in the receiving regenerative apparatus corresponding to reservation viewing and listening or reservation record, if the program of a broadcast schedule is chosen by EPG, it will be made to do at the time of broadcast of the program, and a receiving regenerative apparatus will operate. That is, while tuning in the channel of the selected program automatically, predetermined expanding / decode processing is performed, and the video signal and sound signal of an analog are reproduced and outputted. When recording a program, this video signal and sound signal are recorded on the video tape recorder which made external connection. Moreover, in the case of

voice data, digital storage equipments, such as a mini disc (following, MD) recorder, can be connected, and the elongated digital signal can be inputted direct. And it is recorded on a storage predetermined with a digital signal through D / D transform processing doubled with the format of a recording apparatus.

[0005] Furthermore, when the program to which it views and listens is the paper view (following, PPV) broadcast charged by the program unit or the time basis, the accounting system of CS multichannel digital broadcasting system is interlocked with, and viewing and listening becomes possible. This writes a viewing-and-listening log in the IC card set to the IC card interface section of a receiving regenerative apparatus, and transmits this log to broadcast entrepreneurs, such as a broadcasting station, through the telephone line at a proper transmitter meeting. A broadcast entrepreneur side collects an audience fee by predetermined approaches, such as credit card sanction, based on this viewing-and-listening log.

[0006]

[Problem(s) to be Solved by the Invention] An EPG function is an indispensable function in order to choose the program for which it wishes from a huge number of programs broadcast by many channels. However, unlike broadcast of the content which continued in one programs, such as a film, in a music program, two or more musical pieces are broadcast in one program. Furthermore, narrations, such as a D.J. (following, DJ), are inserted in the intervals of each musical piece in many cases. This DJ's voice has want of wanting to cut to record the musical piece which a viewer wishes. If an air check is carried out on real time, if it records by timer reservation, this unnecessary part will also be recorded together at any rate.

[0007] Since it is the program unit which can be reserved by EPG, after recording all programs as it is going to record only the musical piece to wish, an editing task with still more troublesome dubbing etc. must be carried out. Furthermore, when the musical piece which plurality wishes is broadcast within a separate program, a complicated activity is required of the degree of pole. Moreover, when the music program broadcast is a PPV program, an audience fee is imposed per program recording only the musical piece to wish. Therefore, a viewer's economic burden is increased. Of course, what is necessary is to describe the musical piece broadcast by EPG in a music program, and its broadcast predetermined time, and just to also carry out PPV per musical piece. However, in a live program, it is hard to say that the musical piece expected of prearranged time amount is surely broadcast. Moreover, naturally it is also considered that a broadcast schedule is changed.

[0008] Then, this invention is offering the program distribution approach which can carry out reservation record of the musical piece which corresponds to a live program, modification of a broadcast schedule, etc. flexibly, and wishes the musical piece of a large number broadcast in two or more music programs per one music, and its receiving regenerative apparatus in a multichannel digital broadcasting system.

[0009]

[Means for Solving the Problem] as the distribution approach of the music program in a multichannel digital broadcasting system —— requirements (**) of the following —— we decided to have - (Ha).

(b) Carry out multiplex [ of the sound signal broadcast by the same channel in a data stream including a program list and a broadcast information signal ] to the program data which carried out compression coding, and distribute it.

[0010] (b) As for said program list, the musical piece ID of the broadcast schedule musical piece in the music program from which broadcast is planned by said channel during the predetermined period, a title, a broadcast predetermined time, etc. are described.

[0011] (c) While sending out ID of the musical piece as said broadcast information signal before carrying out broadcast initiation of a certain musical piece during broadcast of said music program in said channel, send out a start signal as said information signal just before broadcast initiation of the musical piece. It is describing the musical piece ID of a broadcast schedule musical piece, a title, a broadcast predetermined time, a broadcast channel, etc. also about the more desirable music program by which broadcast is planned by the channel with said program list other than said channel.

[0012] The receiving regenerative apparatus for carrying out reception playback of the program data distributed by the approach mentioned above A means to extract said program list out of an input signal, and to display on a display as a chart of a predetermined format, If ID of said reserved musical piece is detected a means to choose from said chart the musical piece which a user wishes, and to reserve it, and out of said input signal We decided to have a means to extract the data of said reserved musical piece from said program data according to said start signal, and to record on the storage section, and the means which reads said recorded musical piece data from said storage section.

[0013] When multiple-times broadcast of said reserved musical piece is carried out at said predetermined period, as for this receiving regenerative apparatus, it is desirable to have a means by which the musical piece concerned records said musical piece data of said reservation musical piece on said storage section according to the time amount broadcast most early. Furthermore, you may have a means to display the classification information included in said musical piece list all over said chart, and a means for a user searching the musical piece to which said classification information is distributed as a key, and choosing free.

[0014] Moreover, after record of said musical piece data of said reserved musical piece is completed in said storage section, you may have a means to report to a user that it is possible to read the musical piece data concerned from said storage section. Said receiving regenerative apparatus is interlocked with the accounting system of a multichannel digital broadcasting system, and may enable it to perform record or read-out of said musical piece data.

[0015] Furthermore, the content of the recorded musical piece becomes quite obvious by making a means extract said reserved incidental information, such as a title of a musical piece, and a singer name, from said program list, a means record this incidental information on said storage section with said musical piece data of the musical piece concerned, and the means that reads said recorded incidental information from said storage section, and carries out character representation of that content had.

[0016]

[Embodiment of the Invention] CS multichannel digital broadcasting system is explained as one example of the multichannel digital broadcasting system containing the music program distribution approach in this invention, and its receiving regenerative apparatus. Drawing 1 is the basic block diagram, and consists of a broadcasting station 1, CS10, and a receiving regenerative apparatus 20. A broadcasting station 1 and the receiving regenerative apparatus 20 are connected to timely by the telephone line 40. These basic configurations are completely the same as the conventional CS multichannel digital broadcasting.

[0017] Drawing 2 is a block diagram of a data stream 100 and the program data 200 distributed by the music program distribution approach in the example of this invention. The program data 200 are data which carried out compression coding of the sound signal of a music program by the MPEG 2 method, and consist of data 201, such as DJ part, and data 201 of a musical piece. Of course, these data are not sent out serially and the DJ section and the musical piece section do not necessarily exist as data according to individual like a packet. The data stream 100 by which multiplex is carried out to this program data consists of a program list 101 and an information signal 102 inserted when proper [ in this data stream 100 ]. The program list 101 is a list of musical pieces with which broadcast is planned in the music program which includes other channels during a predetermined period. The incidental information relevant to musical pieces, such as a genre, a singer, a player, and a conductor, is described by this list with the list ID which is the own number of a list, and data, such as a musical piece name corresponding to ID of each musical piece of a broadcast schedule, a broadcast channel, and a broadcast predetermined time. And this program list 101 is serially rewritten by the newest information, and updates List ID each time. The broadcast information signal 102 is sent out before the broadcast synchronizing with the broadcast timing of the musical piece part 202 of the program data 200. The start signal 105 sent out just before ID103 of the musical piece broadcast next, the broadcasting hours 104 of this musical piece, and broadcast of a musical piece is included in this broadcast information signal 102.

[0018] Thus, two or more channels by which data multiplex was carried out exist in one carrier frequency band. This music program for two or more channels is sent out through the same multiprocessing system as the conventional CS multichannel digital broadcasting. The concept of the multiprocessing system is shown in drawing 3 . Data

multiplex is carried out together with the voice data of **, such as a data stream music program which consists of a program list distributed by this example, or a broadcast information signal, etc., and it is sent out by one channel. And program multiplex [ of two or more channels sent out in the same carrier frequency band ] is carried out. Scramble data are added here if needed. A QPSK modulation is carried out and these digital data are sent out to CS. Of course, the program data of other channels sent out with these carrier frequency and other carrier frequencies have not only voice data but a thing containing image data and voice data, such as TV broadcast.

[0019] Drawing 4 is the block diagram of the receiving regenerative apparatus 20 in this example. The intermediate frequency (IF) signal received / changed with the parabolic antenna etc. is inputted, and the central control unit 21 which contains RAM and ROM inside generalizes a peripheral device etc. through a bus 22, performs I/O of data etc., and controls the receiving regenerative apparatus 20. Below, control of the receiving regenerative apparatus 20 by the central control unit 21 is explained.

[0020] If program selection actuation of a user is received from remote control 32 or the actuation input section 31, the alignment section 23 will be aligned with IF of the subcarrier in which it controls and the selected program is included. And in order that two or more programs may recover the program data multiplex by which multiplex was carried out from the IF signal, the recovery section 24 is controlled. It controls so that the demultiplexing section 25 separates this program data multiplex as a data multiplex for every channel. Moreover, it controls also so that the demultiplexing section 25 also performs discharge of a scramble an error correction and if needed. And the separated data multiplex is inputted into the MPEG 2 decoding section 26. Here, expanding / decode processing of compression coded data is performed. D/A conversion of this decode signal is carried out by the voice control section 27 or the image control section 28, and it is inputted into an audio amplifier, TV television machine, etc. as a sound signal or a video signal.

[0021] The receiving regenerative apparatus 20 in this example has the function which reproduces or records program data based on the processing of a data stream by which multiplex is carried out to the music program mentioned above, and this processing besides the regenerative function of such a usual program. A central control unit 21 extracts the program list of [ in the data stream separated with the voice data of a music program in the demultiplexing section 25 ]. Under supervising ID of a program list, the newest program list is always incorporated and processed. And if remote control 32 and the chart display command from the actuation input section 31 are received, it will display by using ID and its musical piece name of the broadcast schedule musical piece which can hear the incorporated program list on the display panel installed in the display and the receiving regenerative apparatus 20 of TV television machine etc. as a chart.

[0022] Furthermore, a genre, a singer name, etc. under program list can be displayed

as classification information all over this chart (they are a player, a conductor, etc. if it is in a performance), and a broadcast schedule musical piece can be searched by using this classification information as a search key. This retrieval function has the powerful retrieval function, such as ambiguous retrieval of inputting and searching AND retrieval, OR retrieval, or vague related matters. Of course, a search key can set up suitably a genre, a singer name, and the various incidental information included in a program list as a search key.

[0023] When choosing the musical piece which a user reserves, referring to this chart, remote control 32 etc. is operated, and the ID number of a musical piece is inputted, or the cursor displayed on a display is moved and it specifies according to the column of a musical piece. And if it finishes specifying all the musical pieces to reserve and a reservation decision input is performed, a central control unit 21 will create the schedule which can be heard most early, when multiple-times broadcast in a predetermined period of the same musical piece is carried out. Moreover, when the program list received waiting [ reservation ] has modification, a schedule is reconstructed serially.

[0024] Thus, it is reproduced according to a schedule or the reserved musical piece is recorded on a proper record medium. In this example, in order to record the reserved musical piece, MD34 is used as the record medium. Therefore, it was presupposed that MD recorder section 33 is built or external connected at the receiving regenerative apparatus. Of course, what kind of method and gestalten, such as a cassette tape, a digital audio tape, or a hard disk of not only MD but an analog, are sufficient as a record medium. Moreover, as long as the music program broadcast is accompanied by images, such as live junction, you may make it record voice and an image on proper record media, such as a video tape and DVD-RAM. If time of day comes before a few [ the broadcast predetermined time extracted from the program list ], a central control unit 21 will control the alignment section 23, the recovery section 24, and the demultiplexing section 25 so that a reservation channel tunes in. And the voice data decoded in the MPEG 2 decoding section 26 is inputted into MD recorder section 33, and MD recorder section 33 is changed into a record standby (sound recording pause) condition. Connection between the MPEG 2 decoding section 26 and MD recorder section 33 is made the optical digital transmission way in consideration of the effect of an external noise etc. And sending out of a broadcast information signal is supervised. If in agreement with the musical piece ID which the musical piece ID in a data stream reserved, will acquire the broadcast hour entry in a broadcast information signal, and it is made to synchronize with a start signal, and the sound recording pause condition of MD recorder section 33 is canceled. MD recorder section 33 records the digital data which performed predetermined D/D conversion and was set by the record format of MD on MD34. Moreover, incidental information, such as control signals, such as a truck mark, record time, or a musical piece name extracted from the program list, is recorded on the predetermined record area of

MD34 in a predetermined format at this time. Selection of the incidental information which record of incidental information or record time permits or records etc. can be suitably set up by actuation of a user. Of course, character representation of the recorded incidental information can be carried out to a display panel etc., or it can be edited into it later. And if the acquired broadcasting hours pass, record will be terminated to compensate for broadcast termination of a musical piece. When there are other reservation musical pieces here, it changes into a reservation record standby condition again.

[0025] After record of a reservation musical piece is completed, a central control unit 21 displays the musical piece number recorded on the display panel of the body 20 of a receiving regenerative apparatus, in order to report that to a user. Of course, this information information can be displayed on TV television machine by which external connection was made.

[0026] Furthermore, the listening log of the musical piece which heard or was recorded on MD is written in IC card 30 at any time. This log is sent out to a proper transmitter meeting by the telephone line through a modem 35. A broadcast entrepreneur calculates a listener's fee for every musical piece which serves as an object for accounting by receiving the sent-out log, and collects a listener's fee in a predetermined procedure.

[0027] In addition, although the broadcast hour entry of a musical piece is inserted into a broadcast information signal in advance of broadcast of a musical piece in this example, this information may be included during a musical piece list, and this hour entry may be acquired with a musical piece ID at the time of reservation selection of a musical piece. Moreover, the end signal synchronized with the broadcast termination timing of a musical piece may be sent out as a broadcast information signal, and record may be terminated with detection of this end signal.

[0028] Moreover, a start signal does not need to be just before broadcast of a musical piece, and you may make it send it out before fixed time amount before musical piece broadcast.

[0029]
[Effect of the Invention] According to the 1st invention, in the music program in a multichannel digital broadcasting system, even if it is mixed by voice other than musical pieces, such as DJ, and it is broadcast, the music program distribution approach which can extract only a musical piece part certainly and can carry out reservation record can be offered. Furthermore, it can respond to a live program, the broadcast time lag of the musical piece by other reasons, modification, etc. flexibly. Furthermore, according to the 2nd invention, the same effectiveness as the 1st invention can be acquired also to the program broadcast by other channels.

[0030] According to the 3rd invention, the receiving regenerative apparatus which can carry out reservation record of the musical piece of hope certainly can be attained, without carrying out complicated actuation for the music program distributed by said

1st or 2nd invention in any way. Therefore, also when a user creates the collection of original copy musical pieces according to liking, it becomes possible from much CDs etc. not to need a complicated editing task, such as dubbing in detail for every musical piece, but to edit automatically. And since it is recordable with a digital signal, it is the quality of loud sound and there is also no degradation with the passage of time. For this reason, the attractiveness to consumers over a consumer's receiving regenerative apparatus is stimulated, as a result it contributes also to development of the multichannel digital broadcasting industry.

[0031] According to the 4th invention, when multiple-times broadcast of the same musical piece is carried out, it can be made to be able to do at the time of the automatic earliest broadcast schedule, and reservation record can be carried out. Therefore, more, the musical piece to wish can be recorded early and can be heard. According to the 5th invention, the program to which the classification information under program list was distributed as a key can be searched, and it can reserve as it is. For this reason, it is not necessary to check all program lists.

[0032] According to the 6th invention, it can check immediately whether it can listen to the program which the user reserved. According to the 7th invention, a user can be burdened with a listener's fee for every heard musical piece. For this reason, the need that a user pays an unnecessary listener's fee is lost, and an economical burden is mitigated. According to the 8th invention, the recorded reservation musical piece becomes quite obvious. For this reason, a duplicate record is prevented or a next editing task becomes easy. Furthermore, the operability at the time of musical piece playback, such as searching the musical piece to wish and reproducing, also improves.

## DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is multichannel digital broadcasting structure-of-a-system drawing in the example of this invention.

[Drawing 2] They are the music program data distributed in the above-mentioned example, and its data multiplex structural drawing.

[Drawing 3] It is the schematic diagram showing the multiplex approach of the program distributed in the above-mentioned example.

[Drawing 4] It is the block diagram of the receiving regenerative apparatus in the example of this invention.

[Description of Notations]

1 Broadcasting Station

10 Communication Satellite

20 Receiving Regenerative Apparatus
21 Central Control Unit
26 MPEG 2 Decoding Section
29 IC Card Interface Section
30 IC Card
33 MD Recorder Section
34 MD
40 Telephone Line
100 Data Stream
101 Program List
102 Broadcast Information Signal
200 Program Data

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